

Combining TENS and tDCS to relieve persistent pain in a patient suffering from complex regional pain syndrome: a case report

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INTRODUCTION

- Complex regional pain syndrome (CRPS) is a neuropathic pain condition characterized by sensory, motor and autonomic alterations.¹
- Past studies have shown that transcranial direct current stimulation (tDCS) and transcutaneous electrical nerve stimulation (TENS) can alleviate pain in various patient populations.^{2,3}
- A recent study in chronic low back pain patients suggest that a combination of tDCS and TENS can be more effective than either intervention applied alone.⁴



OBJECTIVE

To determine if transcranial direct current stimulation (tDCS), alone or in combination with TENS, could be a valuable option for relieving persistent pain in a patient suffering from chronic CRPS.

METHOD

➤ Case report

Patient

- 32 year old woman suffering from CRPS type 1 for more than 3 years in her left lower limb
- Continued to report moderate to severe pain despite medication (pregabalin, tapentadol, duloxetine), rehabilitation treatments (sensorimotor retraining, graded motor imagery, home use of TENS) and spinal cord stimulation

Outcome measures

- ✓ Visual analog scale (VAS): pain intensity and unpleasantness before, immediately after and 15 min after each treatment session
- ✓ Pain logbooks: daily pain levels completed before, during and after treatment using numerical pain rating scales (NRS)

Interventions

- tDCS for 5 consecutive days
- tDCS + low-frequency TENS for 5 consecutive days
————— 6 months interval —————
- tDCS + low-frequency TENS for 5 consecutive days

RESULTS

Figure 1. Pain levels measured by the pain logbook

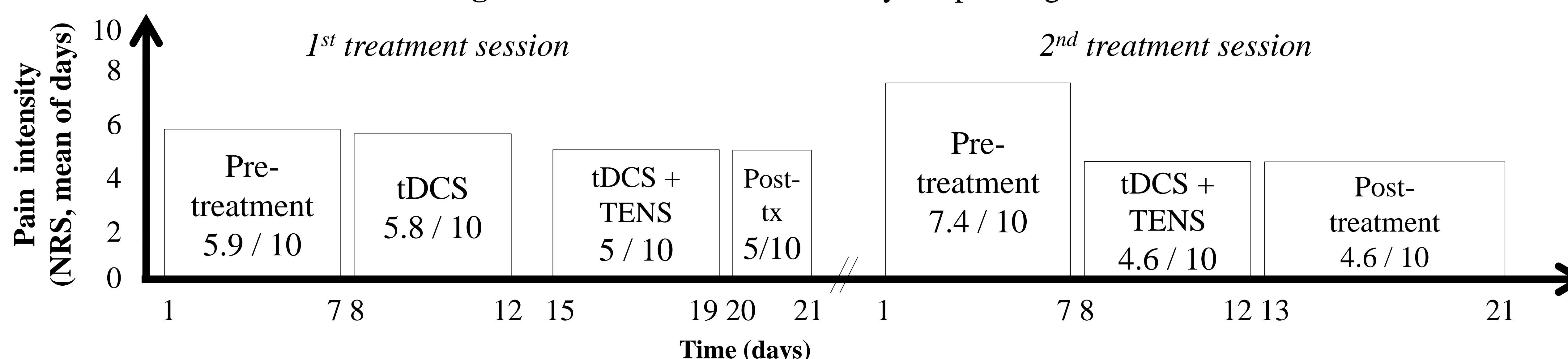


Figure 2. Pain intensity before and after each treatment session

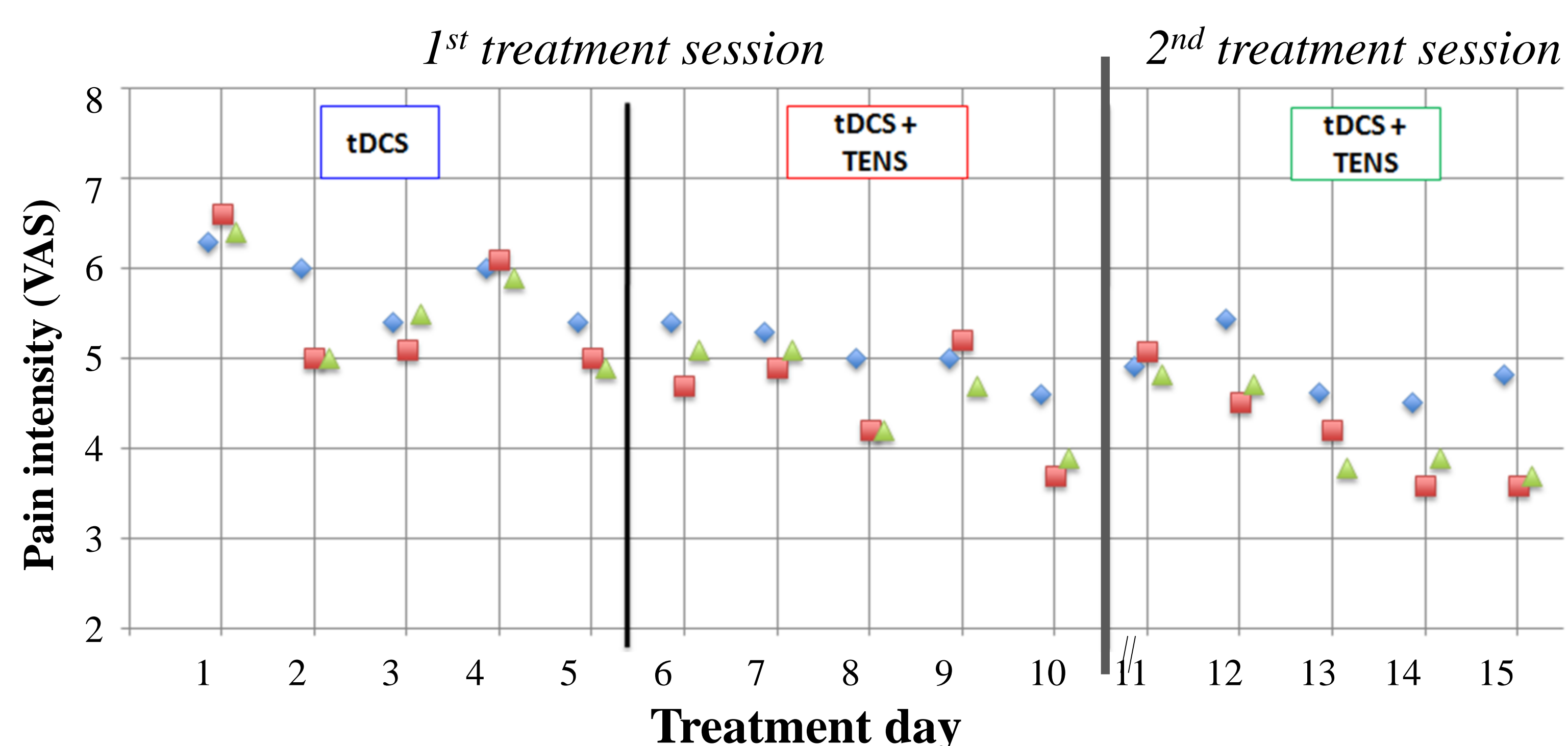
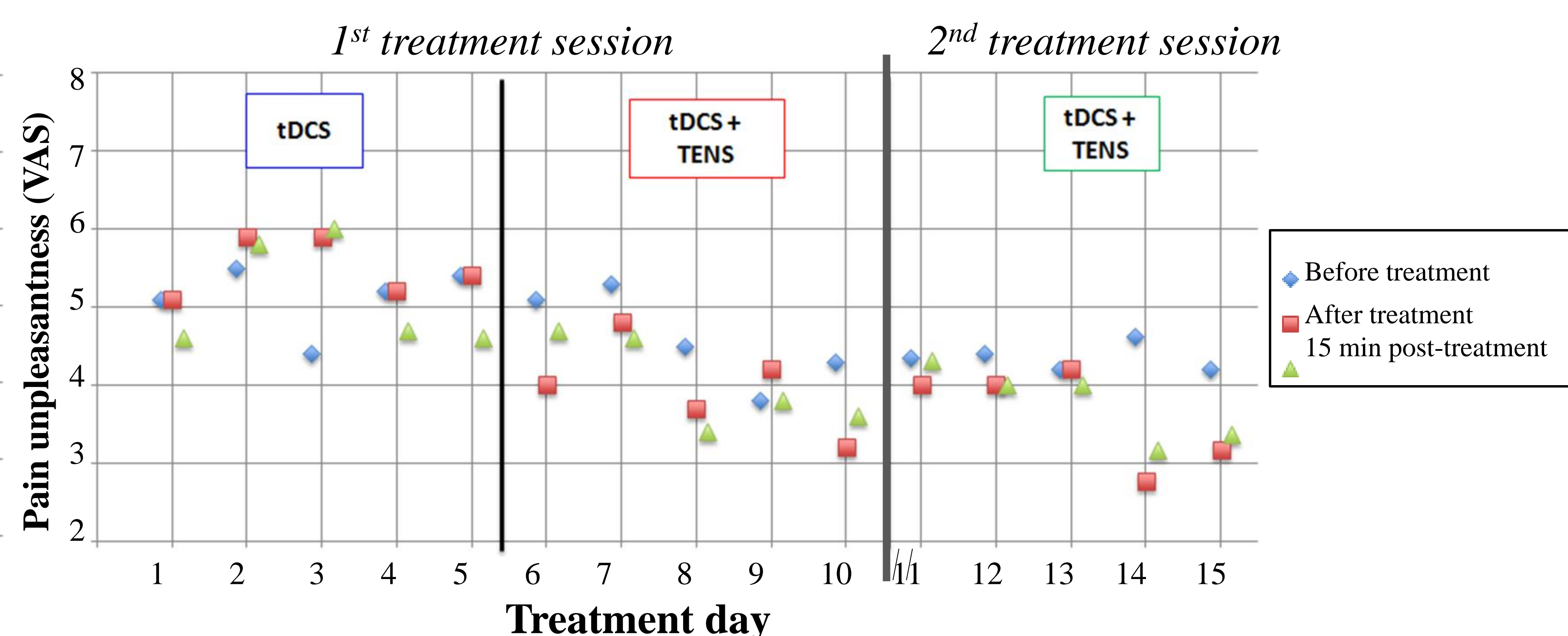


Figure 3. Pain unpleasantness before and after each treatment session



CONCLUSION

- ✓ Combining TENS and tDCS appears to be a promising strategy for patients suffering from long-standing CRPS pain.
- ✓ The nature of the research design (in particular the potential confounding effect of sequence order and the absence of a placebo condition) prevents us from drawing strong conclusions.
- ✓ Future studies are necessary to determine if the results obtained can be replicated using a larger pool of patients.

REFERENCES [1] Harden et al. (2010). *Pain*, 150. [2] Bélanger (2010). *Therapeutic electrophysical agents* (2nd ed.). [3] Boggio, P. S., et al. (2008). *Eur J Neurol*, 15. [4] Schabrun et al. (2014). *Brain Stim*, 1.